

Pre Calculus Honors 7 3 Part II Half Angle and Power Reducing

Lesson 237 | Precalculus | Half-angle and power-reduction identities

<https://www.youtube.com/watch?v=EKQYLCdU3-s>

Original practice aligned to the saved video title.

Name: _____ Date: _____ Show your reasoning.

01

For $0 < \theta < \pi$, $\cos \theta = 12/15$. Find exact $\sin(\theta/2)$ and $\cos(\theta/2)$.

02

For $0 < \theta < \pi$, $\cos \theta = 8/21$. Find exact $\sin(\theta/2)$ and $\cos(\theta/2)$.

03

For $0 < \theta < \pi$, $\cos \theta = 12/18$. Find exact $\sin(\theta/2)$ and $\cos(\theta/2)$.

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04

For $0 < \theta < \pi$, $\cos \theta = 5/13$. Find exact $\sin(\theta/2)$ and $\cos(\theta/2)$.

05

For $0 < \theta < \pi$, $\cos \theta = 7/18$. Find exact $\sin(\theta/2)$ and $\cos(\theta/2)$.

06

For $0 < \theta < \pi$, $\cos \theta = 7/11$. Find exact $\sin(\theta/2)$ and $\cos(\theta/2)$.

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01

For $0 < \theta < \pi$, $\cos \theta = 12/15$. Find exact $\sin(\theta/2)$ and $\cos(\theta/2)$.

$\theta/2$ is in quadrant I, so both roots are positive. $\sin(\theta/2) = \sqrt{(1 - 12/15)/2} = \sqrt{(10)/10}$.
 $\cos(\theta/2) = \sqrt{(1 + 12/15)/2} = 3 \cdot \sqrt{(10)/10}$.

02

For $0 < \theta < \pi$, $\cos \theta = 8/21$. Find exact $\sin(\theta/2)$ and $\cos(\theta/2)$.

$\theta/2$ is in quadrant I, so both roots are positive. $\sin(\theta/2) = \sqrt{(1 - 8/21)/2} = \sqrt{(546)/42}$.
 $\cos(\theta/2) = \sqrt{(1 + 8/21)/2} = \sqrt{(1218)/42}$.

03

For $0 < \theta < \pi$, $\cos \theta = 12/18$. Find exact $\sin(\theta/2)$ and $\cos(\theta/2)$.

$\theta/2$ is in quadrant I, so both roots are positive. $\sin(\theta/2) = \sqrt{(1 - 12/18)/2} = \sqrt{(6)/6}$.
 $\cos(\theta/2) = \sqrt{(1 + 12/18)/2} = \sqrt{(30)/6}$.

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04

For $0 < \theta < \pi$, $\cos \theta = 5/13$. Find exact $\sin(\theta/2)$ and $\cos(\theta/2)$.

$\theta/2$ is in quadrant I, so both roots are positive. $\sin(\theta/2) = \sqrt{(1 - 5/13)/2} = 2 \cdot \sqrt{13}/13$.
 $\cos(\theta/2) = \sqrt{(1 + 5/13)/2} = 3 \cdot \sqrt{13}/13$.

05

For $0 < \theta < \pi$, $\cos \theta = 7/18$. Find exact $\sin(\theta/2)$ and $\cos(\theta/2)$.

$\theta/2$ is in quadrant I, so both roots are positive. $\sin(\theta/2) = \sqrt{(1 - 7/18)/2} = \sqrt{11}/6$.
 $\cos(\theta/2) = \sqrt{(1 + 7/18)/2} = 5/6$.

06

For $0 < \theta < \pi$, $\cos \theta = 7/11$. Find exact $\sin(\theta/2)$ and $\cos(\theta/2)$.

$\theta/2$ is in quadrant I, so both roots are positive. $\sin(\theta/2) = \sqrt{(1 - 7/11)/2} = \sqrt{22}/11$.
 $\cos(\theta/2) = \sqrt{(1 + 7/11)/2} = 3 \cdot \sqrt{11}/11$.